

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

CASEY E. HALL-LANDERS, individually
and on behalf of all others similarly
situated,

Plaintiff,

v.

NEW YORK UNIVERSITY,

Defendant.

Civil Action No. 1:20-cv-03250-GBD

**DECLARATION OF STEVEN P. GASKIN
IN SUPPORT OF CLASS CERTIFICATION**

1. I am Steven P. Gaskin. I make this Declaration based upon my personal knowledge and under authority of 28 U.S.C. § 1746.

I. Introduction and Qualifications

2. I am Steven P. Gaskin. I am an independent survey expert. I have served as a Principal at Applied Marketing Science, Inc., of Waltham, MA (“AMS”) from 2004 - 2020. I hold Bachelor of Science and Master of Science degrees in Management from the Sloan School of Management at the Massachusetts Institute of Technology (“MIT”). I have co-authored a number of articles and papers in such top-ranked peer-reviewed publications as Marketing Science and Management Science. In addition, I have authored several conference presentations on aspects of conjoint analysis.

3. I have served as an expert witness in various legal disputes. I have been called upon primarily to project what customers would have done in different market scenarios and to measure reductions in market value of product features, often through conjoint analysis. My professional qualifications, a list of cases in which I have testified at deposition or trial, and a list of publications I have authored are included in my Curriculum Vitae, attached as **Exhibit A** to this Declaration.

4. In undertaking this assignment, I relied on my extensive expertise in developing, testing, and analyzing surveys, and in interpreting qualitative and quantitative research about consumer attitudes, intentions, and behavior. The facts and/or data upon which I base the opinions and inferences reflected in this Declaration are of a type reasonably relied upon by experts in my field.

5. A complete list of materials I have considered to date in connection with this particular assignment is included as **Exhibit B**. To the extent that I review additional information that I deem worthy of discussing, I will supplement my Declaration and this list.

6. Part of the work for this analysis was performed under my direction by others at Numerious.¹ Throughout this Declaration, I have used the terms “I” and “my” to refer to work performed by me and/or others under my direction.

7. My time as a survey expert is being compensated at a rate of \$800 per hour. Neither my nor Numerious’ compensation is contingent upon the opinions I render or the outcome of this litigation.

¹ <https://www.numerious.com//>

II. Assignment

8. It is alleged that New York University (“NYU” or “Defendant” or “the University”) decided “not to issue appropriate refunds for the Spring 2020 term after canceling in-person classes and changing all classes to an online/remote format,² closing most campus buildings, and requiring all students who could leave campus to do so as a result of the Novel Coronavirus Disease (“COVID-19”).”³ Plaintiff and members of the Class allege that they “were deprived of utilizing services for which they have already paid, such as access to campus facilities, student activities, health services and other opportunities” (the “Closure of the University Campus” or the “Closure”).⁴

9. Plaintiff and the putative class are therefore seeking a refund of tuition for in-person educational services, facilities, access and/or opportunities that Defendant has not provided. Plaintiff seek, for themselves and a proposed class, Defendant’s disgorgement of the difference between the fair market value of the online learning provided versus the fair market value of the live, in-person instruction in a physical classroom on a physical campus with all the attendant benefits for which they contracted.⁵ It is my understanding that the proposed class is defined as “All undergraduate students enrolled in classes at NYU at one of NYU’s New York campuses during the Spring 2020 semester who paid tuition” (the “Class”).

10. Assuming Plaintiff’s allegations are true, I was asked by counsel for Plaintiff to design and describe a market research survey and analysis that would enable me to assess the extent of any reduction in market value resulting from the Closure of the University Campus

² When I refer to in-person classes in this Declaration, I mean the choice of in-person or online/remote courses, as opposed to online/remote courses only.

³ Consolidated Class Action Complaint, ¶ 1.

⁴ Id., ¶ 50.

⁵ Id., ¶ 127.

(measured in dollars and/or percentage terms),⁶ meaning the difference in market value between in-person classes and full access to the University's campus and facilities, compared to the market value of online classes and no access to the University's campus or facilities, at the time and point of acceptance. For this survey, I selected choice-based conjoint ("CBC") analysis as the most appropriate survey methodology. I have used this method successfully in other litigation contexts where the objective was to determine the relative market values of a product or service with and without a particular product or service feature or claim on the label or given the disclosure or non-disclosure of a product or service feature at the time and point of acceptance.

11. In undertaking this assignment, I relied on my extensive expertise in developing, testing, and analyzing surveys, and in interpreting qualitative and quantitative research about consumer attitudes, intentions, and behavior.

III. Summary of Expected Conclusions

12. The conjoint analysis I describe in this Declaration is designed to estimate any reduction in market value (measured in dollars and/or percentage terms) due to the Closure of New York University Campus in Spring 2020, meaning the difference in market value between in-person classes and full access to New York University's campus and facilities, compared to the market value of online classes and no access to New York University's campus or facilities, at the time and point of acceptance.

13. The scientific methodology I used to design and intend to use to execute and analyze the survey in this Declaration is sound, reliable, and valid. The results will be relied upon

⁶ The conversion of dollar figures to a percentage amount is a relatively straightforward undertaking, which is done in a fair and conservative way that has been accepted by many courts (*see* ¶ 15 for examples of these cases). This conversion to a percentage amount is described in ¶ 55.

to draw inferences about any reduction in market value attributable to the Closure of the New York University Campus at issue.

IV. Overview of Methodology

14. The basic methodology that I selected is known as web-based conjoint analysis. Conjoint analysis is a tool that enjoys wide use and acceptance in the field of market research. It was introduced to the field of market research in 1971 and is generally recognized by marketing science academics and industry practitioners to be the most widely studied and applied form of quantitative market value measurement. It has been shown to provide valid and reliable measures of consumer choices, and these have been shown to provide valid and reliable estimates of the relevant market value under scenarios related to those measured.⁷

15. I have performed similar analyses using similar methodologies before. For example, I was retained as an expert in *Hadley v. Kellogg Sales Company*, No. 5:16-cv-04955 LHK (N.D. Cal.) and *Krommenhock v. Post Foods LLC*, No. 3:16-cv-04958 WHO (N.D. Cal.), cases that involved misleading health claims due to high sugar levels in cereals. Similarly, the *Milan v. Clif Bar and Company*, No. 3:18-cv-02354-JD (N.D. Cal.) case involved misleading health claims due to high sugar levels in nutrition bars. The *Prescod v. Celsius Holdings, Inc.*, No. 19STCV09321 (Cal. Super. Ct., L.A. County) case involved a misrepresentation involving the use of artificial ingredients in energy drinks. Additionally, *Sanchez-Knutson v. Ford Motor Co.*, No. 14-civ-61344 WPD (S.D. Fla.), and more recently, *Banh v. American Honda Motor Co.*, No. 2:19-cv-05984 RGK (C.D. Cal.), *Braverman v. BMW of North America, LLC*, No. 16-cv-00966 TJH

⁷ Louviere, Jordan (1988). "Conjoint Analysis Modelling of Stated Preferences: A Review of Theory, Methods, Recent Developments and External Validity," *Journal of Transport Economics and Policy: Stated Preference Methods in Transport Research*, Vol. 22, No. 1 (Jan.), pp. 93-119.

(C.D. Cal.), *Cardenas et al. v. Toyota Motor Corp.*, No. 18-22798-Civ-Moreno (S.D. Fla.), *Johnson et al. v. Nissan North America, Inc.*, No. 3:17-cv-00517 (N.D. Cal.), and *Sonneveldt et al. v. Mazda Motor of America, Inc.*, No. 8:19-cv-01298-JLS-KES (C.D. Cal.) were all class action lawsuits that concerned motor vehicle defects. I was also retained as an expert in a class action lawsuit, *Khoday v. Symantec Corp. and Digital River, Inc.*, No. 0:11-cv-00180 JRT (D. Minn.), which concerned a software product. The In Re: *Lenovo Adware Litigation*, No. 5:15-md-02624 RMW (N.D. Cal.) case concerned a software privacy and security issue. The In Re *Arris Cable Modem Consumer Litigation*, No. 17-cv-1834 LHK (N.D. Cal.) case involved latency problems with Internet modems. The *Koenig v. Vizio, Inc.*, No. BC702266 (Cal. Sup. Ct.) case involved refresh rates of LED televisions. The *Kaupelis v. Harbor Freight Tools USA, Inc.*, No. 19-cv-1203 JVS (C.D. Cal.) case involved a chainsaw defect. The *Bailey v. Rite Aid Corporation*, No. 4:18-cv-06926 YGR (N.D. Cal.) case involved a misleading claim on acetaminophen gelcaps. The *Maldonado v. Apple, Inc.*, No. 3:16-cv-04067-WHO (N.D. Cal.) case involved the market difference between new and remanufactured iPhones and iPads. The *Bechtel v. Fitness Equipment Services, LLC, DBA Sole Fitness*, No. 1:19-cv-00726 (S.D. Ohio) case involved a misrepresentation concerning horsepower in treadmills. The *Gunaratna v. Dr. Dennis Gross Skin Care*, No. 2:20-cv-02311-MWF-GJS (C.D. Cal) case involved a misleading claim on cosmetic skincare products. The *Ninivaggi, et al., v. University of Delaware*, Civil Action No. 20-cv-1478-SB/Russo v. University of Delaware, Civil Action No. 20-cv-1693-SB case involved an overcharge of tuition fees during the COVID-19 pandemic. The *VanCleave v. Abbott Laboratories*, No. 19CV345045 (Cal. Super. Ct., S.CL. County) case involved misleading health claims on children's nutrition drinks. In all 21 cases, I proposed using a similar methodology to the one I propose here. The courts found the methodology suitable as a basis for calculating

damages and certified the classes. Either before or after the courts accepted my damages methodology and granted class certification, I performed full analyses for the Ford, Honda, Toyota, Mazda, BMW, Symantec, Lenovo, Arris, Vizio, Kellogg, Post, Apple, University of Delaware, and Clif Bar lawsuits, in a way generally consistent with the methodology I propose here.

16. The general idea behind conjoint analysis is that the market value for a particular product is driven by features, or descriptions of features, embodied in that product. During the survey, consumers are shown sets of product profiles made up of varying features (“choice sets”) and asked, as part of a series of “choice tasks,” to indicate their preferred product profile among those shown. At no point are respondents asked to indicate directly how much they would pay for any product or given set of features; rather, the analysis is based on choices respondents make among alternative product profiles like those that are shown in the choice tasks described in this Declaration (see Figure 1 below as an example of a single “choice task”).

Figure 1: Choice Task Example

If these were your only options and you had to choose a university to enroll in, which university would you choose? Choose by clicking "Select" for one of the options below. Click or tap the next button at the bottom to continue.

Please assume that the universities do not vary on any features other than the features that are shown to vary. As a reminder, please assume you are actually considering enrolling as an undergraduate at a college or university, and you are making your university choices prior to the COVID-19 pandemic, so it should not be a factor in your decisions.

You may click or tap on any attribute to review the levels included in each at any time.

If you are taking the survey on a mobile device, you may need to turn your phone to get a wider screen. You also will need to swipe and view all three products before making your selections.

(1 of 12)

University	Northeastern University	Northeastern University	New York University
Best National University Ranking	Ranked in the top 10 Top Universities in the US according to the U.S. News and World Report	Ranked in the top 21-30 Top Universities in the US according to the U.S. News and World Report	Ranked in the top 11-20 Top Universities in the US according to the U.S. News and World Report
Student-Faculty Ratio	12:1 student-faculty ratio	10:1 student-faculty ratio	14:1 student-faculty ratio
4-Year Graduation Rate	90% Graduation Rate	80% Graduation Rate	85% Graduation Rate
Ethnic Diversity Index	The Ethnic Diversity Index is a .75 out of 1	The Ethnic Diversity Index is a .7 out of 1	The Ethnic Diversity Index is a .65 out of 1
Class and Campus Format	Classes are offered in person; have access to campus and facilities	Classes held online; no access to campus or facilities	Classes held online; have access to campus and facilities
Tuition per Semester	\$25,000	\$26,250	\$28,750
	<input type="button" value="Select"/>	<input type="button" value="Select"/>	<input type="button" value="Select"/>

Given your knowledge of universities, would you or would you not **actually be willing to enroll at the university that you chose above with the tuition indicated?** As a reminder, please assume you are actually considering enrolling as an undergraduate at a college or university, and you are making your university choices prior to the COVID-19 pandemic, so it should not be a factor in your decisions.

17. I used Sawtooth Software (<http://sawtoothsoftware.com>) for the programming of the survey and will make use of it for the analysis of the survey's results. Sawtooth Software is a

leading provider of conjoint analysis software.⁸ Its software is used by academics and business practitioners around the world. Conjoint analysis provides respondents with realistic choices among hypothetical products that vary on multiple feature categories. Its use of appropriate statistical methods, including Hierarchical Bayes (“HB”) regression analysis,⁹ enhances predictive ability, making the conjoint analysis even more reliable and valid.

18. The randomization of the order and appearance of the features and levels in the survey helps keep the respondent from focusing on a single feature or attribute,¹⁰ which minimizes demand artifacts that might be induced. A “demand artifact” is similar to a leading question in that it encourages respondents to answer a question in a way that the researcher would prefer or that they feel the researcher is “demanding.”¹¹

19. The conjoint analysis uses data from the survey on the feature levels of the product profiles shown, and the resulting choices of respondents, to generate partial contributions of these feature levels (“partworths”) to overall product utility.¹² The partworths for feature levels are identified with the estimation methods so that the partworths best predict customers’ choices from the survey. Conjoint analysis allows for the prediction of the probability that customers will choose any product profile that can be described by the feature levels and can do so for any competitive set of products. I can also simulate how choice shares would change in a market based on a change in overall price. By making use of these capabilities, CBC allows me to determine

⁸ Sawtooth Software, Inc.’s Lighthouse Studio package, which is a well-known and widely used software system for these types of applications, will be used to program the conjoint analysis section of the questionnaire and analyze the survey results.

⁹ *The CBC System for Choice-Based Conjoint Analysis (Version 9)*, Sawtooth Software Technical Paper Series, 2017.

¹⁰ “Attribute” is another commonly-used term for a product feature. I will be making use of it below.

¹¹ Simonson, I., and R. Kivetz (2012). “Demand Effects in Likelihood of Confusion Surveys: The Importance of Marketplace Conditions,” *Trademark and Deceptive Advertising Surveys: Law, Science, and Design*, Shari Seidman Diamond and Jerre B. Swann, Eds, Chicago, IL.: ABA Publishing, American Bar Association, p. 243.

¹² “Utility” is an economic term referring to the total satisfaction received from consuming a good or service.

the reduction in market value (measured in dollars and/or percentage terms) between in-person classes and full access to the University's campus and facilities, compared to the market value of online classes and no access to the University's campus or facilities.

20. As noted above, to estimate the partworths, I will use a method known as Hierarchical Bayes (HB) regression. HB provides reliable and valid conjoint analysis estimates of partworths. It is the most commonly used estimation method for choice-based conjoint analysis.¹³ HB regression makes use of data from the overall sample of respondents when estimating the partworths for each individual respondent. Its use enables me to appropriately balance the number of choice tasks in each survey with the number of partworths that need to be estimated. I have observed in other conjoint surveys that I have conducted that this reduction in the number of choice tasks needed limits respondent wear-out.¹⁴

21. Hierarchical Bayes Choice-Based Conjoint ("HB CBC") estimation enables me to obtain more precise estimates of market level distributions from individual, respondent-level estimates. HB CBC partworth estimates are best suited for calculating statistics at the market level, such as the average or median value of certain variables of interest, and for simulating the overall, aggregate behavior of the market.

22. Conjoint analysis uses information from consumer behavior theory which makes the partworth estimates even more precise. For example, consumer behavior theory indicates that preferences are monotonic in price, i.e., all else equal, people prefer to pay less than to pay more. Ignoring this theory would result in estimating a model that does not use all of the available data.

¹³ It is often referred to as the "gold standard" for CBC estimation. *See, for example,* https://sawtoothsoftware.com/help/lighthouse-studio/manual/estimating_utilities_with_hb.html

¹⁴ If too many questions are asked of a respondent, then the respondent may "wear out," that is, response errors may increase as the respondent tires. Not only will I limit the number of questions in the choice task to minimize wear out, but I will also pretest the questionnaire to assure that respondents did not experience wear out. *See* Section IV for details on pretesting.

23. In CBC, customers are shown sets of product profiles (called the “choice sets”) and asked to choose the profile that they most prefer, or, in other words, the profile that they would choose if they were making a choice, and if the choice set described the only products that were available to them.

24. In the survey, I will present respondents with a series of twelve choice tasks in which they choose from three university profiles (and indicate if they would choose none at all). Before being presented with the choice task, respondents will be asked to make certain assumptions, including the following:

- You have applied and been accepted to each of these universities.
- You are actually considering enrolling as an undergraduate at a college or university.
- Each of the features shown about each university is true, even if you know or think otherwise, including cost of tuition.
- The universities do not vary on any features other than the features that are shown to vary in the exercise.
- You are making your university choices prior to the COVID-19 pandemic, so it should not be a factor in your decisions.

25. Product profiles are composed of and vary by seven features in the survey: (i) University; (ii) Best National University Ranking; (iii) Student-Faculty Ratio; (iv) 4-Year Graduation Rate; (v) Ethnic Diversity Index; (vi) Class and Campus Format; and (vii) Tuition per Semester.

26. When price (in this case, the cost per semester for attending the University) is one of the measured features in a conjoint analysis, the value (negative or positive) that the market places on changes in features can be expressed in dollars and/or percentage terms. That is, reduction in market value can be calculated as the price reduction needed to compensate, for the Class, for the loss of a feature or a change to a worse level of a feature. Similarly, added market value, or the price premium customers would pay, for the Class, for the inclusion of a feature or a better level of a feature can be calculated. Because CBC is based directly on customer choices, it is, in my opinion, an ideal survey method to determine the reduction in market value that might result from the Closure of the University Campus at issue in this lawsuit. In particular, we can determine the reduction in market value (measured in dollar and/or percentage terms) between the University with in-person classes and full access to the University's campus and facilities, compared to the market value of the University with online classes and no access to the University's campus or facilities. It is my opinion, based on conversations with Plaintiff's economics expert, Mr. Colin Weir, that the conjoint methodology set forth in this Declaration accounts for appropriate supply side factors, including that (1) the price range used in the survey reflects the actual market tuition prices that prevailed during the relevant semester; and (2) the number of students used (or assumed) in the damages calculations reflects the actual number of students enrolled during the relevant semester (the number of students enrolled being fixed as a matter of history).¹⁵

¹⁵ See the Declaration of economist Colin Weir for further information.

V. Questionnaire Development

27. To determine the appropriate attributes and levels for the trade-off exercises in this survey, I first determined the features that would be used to describe each product profile. The attributes and levels included in the conjoint choice task for the survey do not need to include every possible feature of the school at issue; in fact, it would be contrary to best practices to do so. The main purposes of having different attributes and levels are to provide a reasonable and engaging choice task, and to help disguise our chief interest in respondents' reactions—here, their reactions to the Class and Campus Format attribute. In the survey, all attributes other than the ones shown are held constant.

28. As explained above, one of the attributes in the conjoint survey is price (Tuition per Semester), which allows for a determination of the differences in market values among various attributes and levels and allows me to calculate any reduction in market value.

29. “Class and Campus Format” refers to the student’s university experience and whether or not classes and campus facilities are offered in-person or remotely. I am not opining on the truth or falsity of the allegations of the Complaints regarding the Closure of the University Campus, or on whether Plaintiff will prevail on the merits. I am relying on the Complaints, discussions with counsel, and the documents listed in Exhibit B for the description of the Closure of the University Campus and student experience in the survey.

30. To determine the remaining attributes, I consulted the Complaint, used information from New York University’s website pages, reviewed the admissions websites and third-party websites of New York University’s competitors,¹⁶ reviewed various college decision websites,¹⁷

¹⁶ See Exhibit B (Materials Reviewed) for more details.

¹⁷ *Ibid.*

and reviewed enrollment data for New York University and competitors in order to choose features and tuition values that would be recognizable to a common audience and would simulate an undergraduate education choice experience.¹⁸ After conducting this research, I included the following attributes in the survey:

- “University” refers to the college or university in which the respondent is considering enrolling,
- “Best National University Ranking” refers to the U.S. News and World Report ranking of universities in the U.S.,
- “Student-Faculty Ratio” refers to the number of students in comparison to how many faculty members there are at the college or university,
- “4-Year Graduation Rate” refers to the percentage of undergraduate students that graduate in four years,
- “Ethnic Diversity Index” indicates the degree to which the college or university is ethnically diverse according to the demographic data sourced from the U.S. Department of Education’s National Center for Education Statistics Integrated Postsecondary Education Data System,
- “Tuition per Semester” is also a necessary variable so that the value placed by respondents on the various features can be expressed in terms of price. The range of prices I am using in the conjoint analysis will mirror those actually observed in the market.

¹⁸ *Ibid.*

31. The questionnaire will be programmed into a web-based software system designed for administering and analyzing such questionnaires. Respondents will answer all survey questions via their desktop, laptop, tablet, or smartphones.

32. To avoid order bias, the attributes will be shown in a different order, chosen at random, for each respondent (except University and Tuition per Semester, which will always be first and last, respectively).

33. It is standard survey practice to avoid indicating the sponsor and purpose of the survey to ensure respondents' objectivity and to make respondents "blind" to the sponsor and purpose of the survey. The design and administration of my survey will be characterized as blind to the respondents (as will be verified by the pretest interviews).¹⁹ Because the survey will be administered via the Internet, respondents will not be exposed to human interviewers, thereby eliminating the possibility of an interviewer communicating the sponsor or purpose of the survey and influencing the outcome (intentionally or not). An Internet-based survey avoids demand artifacts that might be induced by means of intonation or facial expressions during the delivery of particular questions or answers. An Internet-based survey removes, or at least greatly diminishes, any "interviewer bias" which may arise from the desire of the respondents to please, displease, or impress the interviewer. (One might say that the computer, as well as the respondent, is blind to the survey's purpose; hence the survey is double-blind.)

¹⁹ Diamond, Shari S., (2011). "Reference Guide on Survey Research," *Reference Manual on Scientific Evidence (Third Edition)*, Washington, D.C.: The National Academies Press, pp. 410-411.

VI. Pretesting the Questionnaire

34. The conjoint questionnaire will be pretested with 20 respondents. The pretests will consist of 10 preliminary pretest interviews that will be conducted to identify and correct any possible issues with the survey, and 10 final pretest interviews that will be verbal debriefs with respondents after they have answered the survey questions. I will test the following: that respondents did not have difficulty with the questions and instructions; that they understood the choice exercise they were asked to perform; that they looked at all or almost all of the features in making their choices; and that they did not think the questions were leading or biased. Additionally, I will ask respondents about their beliefs regarding the sponsor and purpose of the survey. Pretesting will ensure that respondents understood and would continue to understand the questions, instructions, and descriptions presented in the questionnaire. This also will ensure that the survey flows smoothly. Following standard procedures, no pretest responses or pretest respondents will be included in the final sample.

VII. Identifying the Sample

35. I will use a top web panel provider²⁰ to target United States residents aged 18 and over who indicate that they personally applied to New York University or one of its competitors for undergraduate education in the past 20 years.

36. Internet surveys are a common form of market research. In addition, there is evidence that data collected using Internet surveys do not differ in quality from that collected using phone or mall-intercept methodologies.²¹

²⁰ Prodege (<https://www.prodege.com/>).

²¹ Poret, Hal. (2010). "A comparative empirical analysis of online versus mall and phone methodologies for trademark surveys," *The Trademark Reporter*, Vol. 100, No. 3 (May-June), pp. 756-807.

37. For the survey, potential respondents from New York University or competitive universities will be selected at random through a web panel and sent an invitation to go to a website to complete the survey. Each invitation will include a URL with an embedded password that is matched against a list of valid passwords and against the list of passwords that have already been used. (The former assures that only valid respondents complete the questionnaire. The latter assures that each respondent completes the questionnaire at most once.) Respondent panels motivate respondents to participate in surveys by giving them a small monetary incentive. The incentive is not contingent on respondents providing particular answers in the conjoint task and there is consensus in the industry that such small monetary incentives do not lead to any bias in a survey's results.²²

38. Following validation, respondents will be screened to ensure that they personally applied to New York University or one of its competitors for 4-year undergraduate education in the past 20 years. I plan to have at least 300 respondents complete the survey.

39. A sample size of 300 respondents is more than sufficient for making scientifically valid conclusions on the basis of the survey. This sample size exceeds the minimum requirements laid out by Sawtooth Software for sample size in a conjoint analysis survey.²³ I have made, and validated, forecasts based on quantitative surveys of 300 respondents, and sample sizes such as these are commonly used by large businesses to make important decisions.

²² Singer, Eleanor (2012). "The Use and Effects of Incentives in Surveys," Survey Research Center, Institute for Social Research, University of Michigan, p. 17.

²³ Orme, B. (2020). "Chapter 7: Sample Size Issues for Conjoint Analysis," *Getting Started with Conjoint Analysis: Strategies for Product Design and Pricing Research, (Fourth Edition)*, Manhattan Beach, CA.: Research Publishers LLC., p. 65.

40. After clicking the link from the email invitation, respondents will be asked bot challenge questions, a canvas generated math question, to ensure that responses are not computer-generated.²⁴

41. To ensure respondents pay attention to the questions and read carefully, I will include a fake university name among the list. This is known as a red herring, a type of survey question that incorporates a fake option among valid ones. Respondents selecting this fake option will be reviewed and considered as a bad respondent and removed from analysis. At the end of the survey I will ask respondents to briefly describe what the survey was about which helps determine whether or not they were paying attention. If their responses to this question are not reflecting what the survey is about, the respondents will be considered as bad respondents and removed from analysis.

42. After data are collected, respondents' data will be reviewed for "speeding," "lagging," and "straightlining" according to generally accepted data cleaning procedures. To establish the speeding criteria, the survey is tested internally to determine the fastest reasonable completion time for the survey as a whole, as well as for the conjoint analysis choice tasks themselves. "Lagging" respondents are those whose time to complete the survey shows that they did not follow the instruction to take the survey in one session. "Straightlining" is judged based on an invalid pattern of responding to the conjoint portion of the survey (i.e., inputting the same response to at least 11 of the 12 choice tasks in the conjoint exercise).

²⁴ The bot-challenge question is a simple math question (addition or subtraction with numbers 10 or less) generated using a canvas html element, with the intention that a bot that is scraping a webpage for information will not be able to parse the image correctly. For more information see the Research Methods Paper "*Yoshimi* Battles the Survey Bots: How you can work to defeat those evil-natured robots in your online survey samples, Sawtooth Software Analytics & Insights Summit 2024*"

VIII. Survey Administration

43. The screening portion of the survey begins by asking respondents which type of device they are using to complete the survey. Respondents on a desktop, laptop, tablet, or smartphone will be allowed to continue; those who indicate that they are using another mobile or electronic device receive an instruction that the survey is not formatted for viewing on such devices and will be prompted to log back into the survey using a desktop, laptop, tablet, or smartphone. Respondents' state of residence currently and at the time of applying for undergraduate education will also be collected. Respondents will be asked if they or anyone in their household work for certain types of companies. Respondents who indicate that they or someone in their household work for a marketing or market research firm, a public relations or advertising agency, or administration or faculty at a college or university will not be allowed to continue. Screening also ensures that I sample those respondents who have personally applied to New York University or one of its competitors for 4-year undergraduate education in the past 20 years.

44. To avoid influencing respondents' answers and survey results and to minimize answers from uninformed respondents, I will use filters in my survey question response options, such as the answer option of "None of the above." I will also randomize answer options in the survey questions where it is appropriate.

45. In the main part of the survey, respondents will be introduced to the conjoint exercise and shown a list of the college/university features that will be varied in the product profiles presented in the upcoming choice tasks. They will be asked to make certain assumptions while completing the exercise.²⁵

²⁵ Assumptions include the following: 1) You have applied and been accepted to each of these universities; 2) You are actually considering enrolling as an undergraduate at a college or university; 3) Each of the features shown about each university is true, even if you know or think otherwise, including cost of tuition; 4) The universities do not vary on

46. Respondents will then be shown a set of introductory descriptions of the features that each university profile shown in the conjoint exercise will include. Respondents will be shown the description for each feature prior to continuing to the choice tasks. These descriptions will be made accessible later in the survey, while completing the choice exercise, by clicking on the name of the feature in each choice task. The features and feature levels that will be presented to respondents in the survey's choice tasks are as follows:

University

The universities you will choose from vary by **University**.

- Some of these universities have satellite or regional campuses – please assume you would be enrolling at the main campus.

The Universities shown (in alphabetical order) in the exercise include:

Boston University	Columbia University	Cornell University	New York University	Northeastern University
Number of undergraduate students: ~18,459	Number of undergraduate students: ~8,902	Number of undergraduate students: ~15,735	Number of undergraduate students: ~29,401	Number of undergraduate students: ~16,302
Main Campus Location: Boston, MA	Main Campus Location: New York, NY	Main Campus Location: Ithaca, NY	Main Campus Location: New York, NY	Main Campus Location: Boston, MA
Fall 2019 Acceptance Rate: 22%	Fall 2019 Acceptance Rate: 6%	Fall 2019 Acceptance Rate: 11%	Fall 2019 Acceptance Rate: 20%	Fall 2019 Acceptance Rate: 19%
Fall 2019 SAT composite score for the 25 th to 75 th percentile of enrolled students: 1330 – 1500	Fall 2019 SAT composite score for the 25 th to 75 th percentile of enrolled students: 1450 – 1560	Fall 2019 SAT composite score for the 25 th to 75 th percentile of enrolled students: 1390 – 1540	Fall 2019 SAT composite score for the 25 th to 75 th percentile of enrolled students: 1310 – 1510	Fall 2019 SAT composite score for the 25 th to 75 th percentile of enrolled students: 1360 – 1540
Fall 2019 ACT composite score for the 25 th to 75 th percentile of enrolled students:	Fall 2019 ACT composite score for the 25 th to 75 th	Fall 2019 ACT composite score for the 25 th to 75 th percentile of enrolled students:	Fall 2019 ACT composite score for the 25 th to 75 th	Fall 2019 ACT composite score for the 25 th to 75 th percentile of enrolled students:

any features other than the features that are shown to vary in the exercise; and 5) You are making your university choices prior to the COVID-19 pandemic, so it should not be a factor in your decisions.

30 – 33	percentile of enrolled students: 33 – 35	32 – 34	percentile of enrolled students: 29 – 34	32 – 34
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You will have access to this information throughout this survey.

Best National University Ranking

The universities you will choose from vary by **Best National University Ranking**.

The rankings shown have been sourced from U.S. News and World Report, an American media company that publishes news, opinions, consumer advice, rankings, and analysis.

- U.S News is a recognized leader in college, grad school, hospital, mutual fund, and car rankings.
- To be ranked, institutions had to meet the following conditions: have regional accreditation, be included in Carnegie's Basic classification but not designated as a "highly specialized" school, enroll at least 100 undergraduate students, have reported financial expenditures data to the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) finance survey, and have reported a six-year graduation rate of full-time, first-year bachelor's degree-seeking students in recent years. Surveyed schools not passing all of these criteria are listed as unranked.

Best National University Ranking levels shown in the exercise include:

Ranked in the top 31-50 Top Universities in the US.	Ranked in the top 21-30 Top Universities in the US.	Ranked in the top 11-20 Top Universities in the US.	Ranked in the top 10 Top Universities in the US.
The university's is ranked in the top 31-50 Top Universities in the US according to the U.S. News and World Report	The university's is ranked in the top 21-30 Top Universities in the US according to the U.S. News and World Report	The university's is ranked in the top 11-20 Top Universities in the US according to the U.S. News and World Report	The university's is ranked in the top 10 Top Universities in the US according to the U.S. News and World Report

You will have access to this information throughout this survey.

Student-Faculty Ratio

The universities you will choose from vary by **Student-Faculty Ratio**.

- A student-faculty ratio indicates the number of full-time-equivalent students in comparison to how many full-time-equivalent faculty members there are at the college or university.

- This excludes faculty and students of law, medical, business, and other stand-alone graduate or professional programs in which faculty members teach virtually only graduate-level students.
- Faculty numbers also exclude graduate or undergraduate students who are teaching assistants.

The Student-Faculty Ratio levels shown in the exercise include:

14:1 student-faculty ratio	12:1 student-faculty ratio	10:1 student-faculty ratio	8:1 student-faculty ratio	6:1 student-faculty ratio
There is 1 faculty member for every 14 students	There is 1 faculty member for every 12 students	There is 1 faculty member for every 10 students	There is 1 faculty member for every 8 students	There is 1 faculty member for every 6 students

You will have access to this information throughout this survey.

4-Year Graduation Rate

The universities you will choose from vary by **4-year Graduation Rate**.

- The 4-year graduation rate indicates the percent of undergraduate students who graduate in four years.
- To be enrolled full-time, students must take 12 credits per semester. To graduate in four years, students must take and pass at least 15 credits per semester.

The 4-Year Graduation Rate levels shown in the exercise include:

75% Graduation Rate	80% Graduation Rate	85% Graduation Rate	90% Graduation Rate
75% of undergraduate students graduate in four years	80% of undergraduate students graduate in four years	85% of undergraduate students graduate in four years	90% of undergraduate students graduate in four years

You will have access to this information throughout this survey.

Ethnic Diversity Index

The universities you will choose from vary by **Ethnic Diversity Index**.

- The scores shown have been calculated based on the data sourced from The National Center for Education Statistics (NCES)'s Integrated Postsecondary Education Data System (IPEDS) data by implementing United States Census Bureau's Diversity Index Equation.

- The National Center for Education Statistics (NCES) is the primary statistical agency of the U.S. Department of Education. It is one of thirteen principal federal statistical agencies whose activities are predominantly focused on the collection, compilation, processing, or analysis of information for statistical purposes.
- IPEDS is the Integrated Postsecondary Education Data System. It is a system of interrelated surveys conducted annually by the U.S. Department of Education's National Center for Education Statistics (NCES). IPEDS gathers information from every college, university, and technical and vocational institution that participates in the federal student financial aid programs.
- The Census Bureau's mission is to serve as the nation's leading provider of quality data about its people and economy.
- The ethnic categories used in the calculations are Hispanic, White alone, non-Hispanic, Black or African American alone, non-Hispanic, American Indian and Alaska Native alone, non-Hispanic, Asian alone, non-Hispanic, Native Hawaiian and Other Pacific Islander alone, non-Hispanic, Some Other Race alone, non-Hispanic, Multiracial, non-Hispanic.
- The formula produces a diversity index that ranges from 0 to 1. The closer a school's number is to 1, the more diverse the student population.

The Ethnic Diversity Index levels shown in the exercise include:

The Ethnic Diversity Index is a .65 out of 1	The Ethnic Diversity Index is a .7 out of 1	The Ethnic Diversity Index is a .75 out of 1	The Ethnic Diversity Index is a .8 out of 1
The Ethnic Diversity Index for this school is a .65 out of 1	The Ethnic Diversity Index for this school is a .7 out of 1	The Ethnic Diversity Index for this school is a .75 out of 1	The Ethnic Diversity Index for this school is a .8 out of 1

You will have access to this information throughout this survey.

Class and Campus Format

The universities you will choose from vary by **Class and Campus Format**.

- Class and campus format indicate two things about a student's university experience:
 - Whether classes are conducted online or in person at the university's campus.
 - When classes are offered in person, students may have the option to (but not be required to) take them online instead.
 - Whether or not students have physical access to the university campus, its facilities, and the accompanying campus experience.

The Class and Campus Format levels shown in the exercise include:

Classes held online; no access to campus or facilities	Classes held online; have access to campus and facilities	Classes are offered in person; have access to campus and facilities
Classes are held online, and students have no access to the campus, its facilities, or the campus experience	Classes are held online, but students still have access to the campus, its facilities, and the campus experience	Classes are offered in person and students have access to the campus, its facilities, and the campus experience

You will have access to this information throughout this survey.

Tuition per Semester

The universities you will choose from vary by **Tuition per Semester**.

- Tuition at some of the universities in the exercise may be called an instructional fee.
- The tuition listed below does not include any changes in the amount you would pay due to financial aid, work-study, scholarships, or other forms of tuition support.
- This tuition price does not include room and board, the general fee, or any other additional fees. Room and board would be an additional charge if you choose to and are able to live on campus.

The Tuition per Semester levels shown in the exercise include:

\$25,000	\$26,250	\$27,500	\$28,750	\$30,000
The price of tuition per semester is \$25,000	The price of tuition per semester is \$26,250	The price of tuition per semester is \$27,500	The price of tuition per semester is \$28,750	The price of tuition per semester is \$30,000

You will have access to this information throughout this survey.

47. Respondents then will continue to the choice tasks section of the conjoint survey. They will be shown a sample choice task, and then a series of twelve choice tasks, each containing a choice set of three different, hypothetical university options (“university profiles”) that will be described by the combinations of levels of the features that I selected. The choice sets will be chosen by the Sawtooth Software program using a scientific experimental design to ensure that respondents see each level of each feature in the choice sets with roughly the same frequency. The

designs will be highly efficient, i.e., they will provide the estimates of partworths with high precision.²⁶

48. The attributes' order will be randomized across respondents, but not within respondents, in the choice exercises, with the exception of University and Tuition per Semester, which will always be listed first and last, respectively. For each set of three universities, respondents will be asked: "If these were your only options and you had to choose a university to enroll in, which university would you choose?" In the survey's choice tasks, respondents will indicate which of the three options they would choose. In each choice task, respondents also will be presented with a second question which reads, "Given your knowledge of universities, would you or would you not **actually be willing to enroll at the university that you chose above with the tuition indicated?** As a reminder, please assume you are actually considering enrolling as an undergraduate at a college or university, and you are making your university choices prior to the COVID-19 pandemic, so it should not be a factor in your decisions."²⁷

49. Following the twelve choice tasks, respondents in the survey will be thanked for their time and the survey is completed.

IX. Analysis

50. Hierarchical Bayes regression estimates of the partworths for each respondent will be obtained from the survey data using software developed by Sawtooth Software, Inc. As described previously, partworths represent the relative preference or utility associated with each

²⁶ For more technical descriptions, see *The CBC System for Choice-Based Conjoint Analysis (Version 9)*, Sawtooth Software Technical Paper Series, 2017. For this conjoint survey, I intend to select a "Balanced Overlap" design.

²⁷ See Brazell, Jeff D., Christopher G. Diener, Ekaterina Karniouchina, William L. Moore, Valérie Séverin, and Pierre-Francois Uldry (2006). "The no-choice option and dual response choice designs," *Marketing Letters*, Vol. 17, No. 4 (December), pp. 255-268.

level of each product attribute. The overall utility of a product is the sum of the partworths for the attribute levels possessed by the product. The partworths are estimated at the individual respondent level.

51. In order to establish the appropriateness of using the partworths to forecast customer behavior, I will test the fit and predictive ability of the conjoint analysis estimates. One such method is to determine the holdout performance, which measures how well the partworth estimates predict the actual choices made by survey respondents when looking at a subset of the choice tasks not used in the estimation. In other words, if the model is still able to predict product choices for the one choice task that is removed or “held out” from the data used for estimation, I can be more confident in the validity of the model. In very simple terms, I ask the model, “Given the preferences obtained from the partworths estimated from just eleven choice tasks, how well can you predict the product choice in the twelfth?” To get a valid indicator of holdout performance, I will use HB estimation, excluding one of the twelve choice tasks for each respondent from the estimation. I will repeat this process three times, using a different choice task each time, and calculate the percentage of choices that can be predicted correctly with the HB estimates. A purely random approach would predict a choice correctly only 33.3% of the time (one time out of three). It is my experience, based on similar surveys I have conducted, that the HB estimates will be appropriate for making predictions with respect to alternative scenarios.

X. Description of Conjoint Results

52. The results obtained from conducting the conjoint analysis survey will allow me to calculate any reduction in market value (measured in dollars and/or percentage terms)²⁸ attributable to the Closure of the New York University Campus in Spring 2020. Stated differently, I will be able to calculate any reduction in market value between in-person classes and full access to the University's campus and facilities, compared to the market value of online classes and no access to the University's campus or facilities, at the time and point of acceptance.

XI. Calculation of the Reduction in Market Value

53. I will use the Market-Based Method to determine any reduction in market value due to the Closure of the University Campus. The Market-Based Method uses the HB partworths to simulate a market in which all customers react to the same choice set of products and prices. I will use standard procedures in the Sawtooth Software HB CBC software to run the choice simulations. Market simulations using HB CBC partworth estimates are often used by firms to simulate what would happen if a new product were introduced to a market, or if a firm decided to change a feature or features of an existing product. Forecasts based on such market simulations are sufficiently accurate such that firms routinely make decisions based on the results of these simulations.²⁹ To predict customers' choices in the simulation, I will apply an approach commonly used in marketing research called "Randomized First Choice ("RFC") Simulation." Under RFC, a consumer chooses the product with a probability based on the relative utility of the available

²⁸ The conversion of dollar figures to a percentage amount is a relatively straightforward undertaking, which is done in a fair and conservative way that has been accepted by many courts (*see* ¶ 15 for examples of these cases). This conversion to a percentage amount is described in ¶ 55.

²⁹ Orme, B (2020). "Chapter 10: Market Simulators for Conjoint Analysis," *Getting Started with Conjoint Analysis: Strategies for Product Design and Pricing Research (Fourth Edition)*, Manhattan Beach, CA.: Research Publishers LLC, pp. 89-105.

choices, where the consumer's utility from a product is calculated as the sum of the estimated partworths for the features provided by the product plus random draws of the unobserved components in the utility.³⁰

54. The Market-Based Method uses the partworths to predict how customers would react in a hypothetical world in which there are two available configurations of New York University that vary only in their tuition cost and class and campus format. For each respondent, the partworths for the levels present in each product profile will be summed to obtain an overall relative utility for each of the two configurations of New York University. These utilities, in turn, combined with a decision rule (e.g., here, Randomized First Choice), can be used in a conjoint simulator to calculate market shares for the two universities. Since these two configurations of New York University are the only universities available in this market simulation, their shares add to 100%. I will use the Market-Based Method to determine the price difference at which the market, as represented by the respondents, would be indifferent between New York University with in-person classes offered and access to campus and facilities with a higher price, and with online classes (both with access and without access to campus or facilities), but with a lower price. That is, the price difference would be such that respondents would be indifferent between New York University with a Class and Campus Format level equal to "Classes are offered in person; have access to campus and facilities" with a higher price, and New York University with a Class and Campus Format level equal to "Classes held online; no access to campus or facilities" or "Classes held online; have access to campus and facilities" with a lower price. When the market is indifferent, the market share for each university is 50%.

³⁰ The Sawtooth Software HB estimation includes a standard option to perform RFC. The software assumes that the random perturbations on the partworths of each attribute follow a standard Normal distribution and the additional random perturbations at the product level follow a Gumbel distribution.

55. As described above, the Market-Based Method of calculating any reduction in market value due to the change in Class and Campus Format sets up a hypothetical situation in which there are only two alternative universities in the choice set: one university which has what was promised, e.g., “Classes are offered in person; have access to campus and facilities,” and one university which has what was actually delivered, e.g., “Classes held online; no access to campus or facilities.” For each of the two universities in the simulation, we will hold all other features (except tuition) constant at specific levels; the exact levels we will choose for these other features will not affect our calculations. We then will simulate markets with the lower tuition for New York University with the Closure of the University Campus. We will keep lowering the tuition of this university until the market is indifferent between the two universities (i.e., each one has a market share of 50%). That is, we will find the lower price of the second university with online classes; no access to campus or facilities such that half of the market (i.e., as represented by the data from all of the respondents in our analysis) chooses the first university with in-person classes offered and access to campus and facilities, and half of the market chooses the second university with online classes and no access to campus or facilities. The reduction in market value equals the difference between the two tuitions that compensates for the absence of in-person classes and access to campus and facilities. This process will then be repeated at the other tuition levels, lowering the price of the university with online classes and no access to get one measure of reduction in market value, and then raising the price of the university with in-person classes and access to get another.³¹ I will choose, among the tuition price differences obtained at the different

³¹ To calculate the reduction in market value, it is possible to lower the price of the “less desirable” university, or to raise the price of the “more desirable” one. We will try both methods, starting at all five price points, and will report the reduction in market value as the smallest value found across all starting price points. Note, however, that we cannot raise or lower the price beyond the boundaries used in the conjoint analysis (i.e., \$25,000 and \$30,000). From the lower bound price of \$25,000 we can only raise the price for the more desirable university, and for the upper bound price of \$30,000 we can only lower the price of the less desirable university. The maximum reduction in market value that we can measure is, therefore, $\$30,000 - \$25,000 = \$5,000$.

levels of starting prices, the smallest (which is the most conservative) as the reduction in market value for the university with online classes and no access to campus or facilities.³² This dollar value will then be expressed as a percentage of the highest tuition available in the survey (\$30,000 per semester) to give the reduction in market value on a percentage basis. Using the highest price as the denominator of the percentage reduction in market value is the most conservative method, because it gives the lowest percentage of reduction in market value.³³ This percentage will apply equally to all class members.

XII. Expected Conclusions

56. The conjoint analysis I describe in this Declaration is designed to estimate any reduction in market value (measured in dollars and/or percentage terms) due to the Closure of the New York University Campus in Spring 2020, meaning the difference in market value between in-person classes and full access to New York University's campus and facilities, compared to the market value of online classes and no access to New York University's campus or facilities, at the time and point of acceptance.

57. The scientific methodology I used to design and intend to use to execute and analyze the survey in this Declaration is sound, reliable, and valid. The results will be relied upon to draw inferences about any reduction in market value attributable to the Closure of the New York University Campus at issue.

³² I will also calculate the reduction in market value using linear price partworths. This is conceptually simpler but gives slightly higher (less conservative) results.

³³ This is the most conservative method, because the price chosen is in the denominator when calculating the percent reduction in market value and dividing by a larger number gives a lower percentage result.

I declare under penalty of perjury of the laws of the United States that the foregoing is true and correct. Executed on June 20, 2024, in Newcastle, Maine.

A handwritten signature in black ink that reads "Steven P. Gaskin". The signature is written in a cursive style with a horizontal line underneath.

Steven P. Gaskin

Exhibits:

- A. Steven P. Gaskin Curriculum Vitae
- B. Materials Reviewed